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## ABSTRACT

This study seeks to evaluate if and how undergraduate and graduate students in an early childhood education program applied theories of child development and knowledge of pedagogy in discussing and interpreting young children's behavior in two different contexts. This was assessed by analyzing their discourse as they discussed video tapes: (1) in small groups after viewing a video of children playing over the course of 18 months; and (2) in stimulated recall sessions in which the students were reflecting on lessons that they had taught. A brief description is given of the current undergraduate early childhood program at the University College of New York at Oswego, and the procedures used in the study. Data from the study indicated that the undergraduates' discussion of children revealed that they attempted to apply course content to their observations but lacked finely tuned observation skills. As compared to the more experienced teachers, their recommendations were often vague and abstract. Implications of the findings for improving a teacher education program are discussed. (JD)

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# Exploring Preservice and Practicing Teachers' Thinking about Children and Teaching

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## The Problem

There has been a growing body of research examining prospective teachers' thinking and knowledge as they learn to teach (Ball & McDiarmid, 1988; Calderhead, 1988 & 1987). Whereas early research

*sought to understand teachers' attitudes and beliefs through the use of surveys and questionnaires containing a variety of categories predefined by the researcher, more recent studies have sought to understand teachers on their own terms and in their own language by attempting to elicit the often implicit and only partially articulated elements of teacher knowledge that guide teachers actions in specific contexts (Zeichner, Tabachnick & Densmore, 1987, p. 22)*

Clark (1988) has urged teacher educators to engage in research on teachers' thinking as a means of improving teacher education. Also, Hirsch's (1987) recent book listing the terms most literate Americans should know, has inspired researchers in various fields to examine the technical vocabulary of their disciplines.

The present investigation sought to evaluate if and how undergraduate and graduate students in an early childhood education program applied theories of child development and knowledge of pedagogy in discussing and interpreting young children's behavior in two different contexts. This was assessed by analyzing their discourse as they discussed video tapes: (a) in small groups after viewing a video of children playing over the course of 18 months, and (b) in stimulated recall sessions in which the students were reflecting on lessons that they had taught. A better understanding of the way students think about children and their teaching will have direct implications for improving teacher education programs.

## Related Literature

Beyerbach (1988) found that students at three different levels of an undergraduate teacher education program developed an increasingly shared technical vocabulary related to teacher planning as they progressed

through their program. A major shortcoming of that investigation of preservice teachers' thinking was that the concept mapping methodology used yielded no information on how preservice teachers applied this technical vocabulary in a teaching situation.

Morine-Dersheimer, Awua-Boateng, Beyerbach, Corio, Devlin-Scherer, and Norton (1983) used a stimulated-recall methodology to examine similarities and differences in student teachers', cooperating teachers', and college supervisors' thinking about a lesson. Student teachers were asked to stop a video tape of their lesson whenever they made a decision, and describe what their concern was, what they were noticing, what alternatives they were considering, and what they decided to do. Concerns were categorized as to decision points, instructional concerns, information sources, and awareness. The results included a rich description of similarities and differences in the types of concerns raised and types of student behaviors noticed across the three role groups. Previously Calderhead (1981) had analyzed the research using the stimulated recall methodology, and concluded that "although questions of validity cannot be completely resolved, the technique presents a systematic approach to the collection of data potentially useful in research on teaching" (p. 211). His recommendation that this method be used in conjunction with other data analysis techniques was followed in this study.

## Description of the Current Program

The undergraduate Early Childhood Program was designed with the realization that teachers of this age level (3-8 years) require mastery of many skills not required in the intermediate or middle school grades. Students begin the program by gaining a firm foundation in the educational theorists and in curricular foundations for the academic areas of the elementary school.

The second year of the educational sequence focuses on the early childhood years. It is an arrangement of experiences that will enable students to mesh their knowledge of educational theory, child development, and curricular foundations with their knowledge of subject matter and teaching strategies. Students participate concurrently in college classes and field experiences at the primary

level and are encouraged to put theory into practice, evaluate the degree of success in the field, and return to the college classroom to discuss concerns brought about by the experience.

## Method

### Subjects

The sample consisted of one group of nine preservice teachers, in the last semester of their senior year in an early childhood program. The second group consisted of a class of fourteen graduate students, twelve of whom were practicing teachers, in a course entitled "Recent Developments in Early Childhood Education."

### Procedures

Discussion of a video. As part of their regular class experiences, students in both the graduate and undergraduate course were asked to view a video of segments of two children playing in various contexts over the course of 18 months. One of the children, Danny, was a three year old with diagnosed speech problems. Throughout the year and a half the tape spanned, he received intensive speech therapy and his speech improved to near normal for his age. His sister, Sarah, was eighteen months old, with somewhat below average large motor development, resulting from a childhood illness. Her cognitive and language development were normal for her age.

Students were given an assignment sheet asking them to describe the development of the children, note strengths and weaknesses they would address, speculate as to the family life of these children, and compare their responses with their peers. After viewing the video, each group was divided into small groups of three and were asked to discuss their perceptions of the children in the video tape.

Stimulated-recall. Approximately six weeks later, the preservice teachers were video taped teaching a lesson during their student teaching experience. Shortly after each lesson each student teacher participated in a stimulated recall session in which they were asked to stop the tape any time they

made a decision, describe what they were noticing at that point, what alternatives they considered, and what they decided. These sessions were tape recorded for later analysis.

Analysis. The small group discussions of the video tape of children playing, and the tapes of the preservice teachers reflecting on the lessons they taught in the stimulated recall sessions, were transcribed for analysis. The concerns of the students at both levels of the early childhood program were described using a qualitative, inductive approach as delineated by Bogdan and Biklen (1982). Undergraduate and graduate students' discussions were compared and similarities and differences were described. Students use of technical vocabulary in each of the respective courses was analyzed using a computerized word frequency program, which indicated how often each word was used. The concerns of the undergraduates in the stimulated recall session were described using the system used by Morine-Dersheimer et al. (1983) (see Appendix A). Word frequencies were also calculated for these transcripts. In addition, transcripts of the stimulated recall sessions were read by a group of practicing teachers, who summarized the concerns of the preservice teachers. These were compared to the content of the programs these students were a part of, and implications for program development were derived.

## Results

### Group Discussions on Child Development

One of the tapes of the undergraduate students was inaudible, therefore findings are based on small group discussions of six undergraduates (2 groups of 3) and 13 graduate students (4 groups of 3-4).

The undergraduates. Students' observations, generalizations, inferences, and recommendations about the two children in the video and their parents, were listed for each of the taped discussions. Similarities and contrasts across the tapes were noted.

Both undergraduate groups described Danny as excitable, more active, good with his sister (protective, helpful), independent yet a loner, insecure or unsure, and seeking of attention. Both groups characterized Sarah as

dependent, a follower, curious, and content. Both groups commented on the parents' differential treatment of Sarah and Danny. Sarah was the center of attention. As one student expressed it, "Maybe she wasn't dependent and looking for help from them, but they always gave her help." Students said they felt sorry for Danny, who was continually seeking attention. Though both groups attended to language, neither picked up on the fact that Danny's speech, at the start of the tape, was one and a half years below that which would be expected for his age.

Student comments indicated that they attempted to apply concepts they had learned about in class. Yet evident, was a lack of experience with children at this level. Like a preschooler who knew that a furry, four legged critter was an animal, but couldn't discern whether it was a cat or dog, these students had not fully assimilated the technical vocabulary of teaching.

Sometimes they could not remember the technical term that applied to a particular experience. For example, when discussing children's play, one commented "They play together, which is a different stage, right? He keeps trying to get her involved, but she plays alone." This is a partially articulated application of course content on stage of play. However, students do not use the technical vocabulary to which they have been exposed (e.g. parallel play) in discussing child development. The word frequency analysis indicated that students at this level use 'ordinary language' to describe teaching and children. Interesting differences in the total number of words, number of unique words, and number of words used once for each group were noted. These are presented in Table 1.

Whereas there were instances of students correctly applying developmental concepts, there were also instances of misunderstanding evidenced in students' dialogue. For example, one student commented that "motor skills are just beginning to emerge in Sarah, whereas Danny has already got them and just has to refine them." Though developmental screening had indicated this to be the case, none of the students noted that Sarah has relatively poor motor coordination for her age. Students in

both groups also evidenced "selective attention" and made inappropriate inferences. For example, one student concluded that "the parents have a certain kind of child raising theory that was kind of strange like they were college professors." Actually, neither parent had ever gone to college. Possibly it was assumed that since the researcher who recorded the video was a college professor, she would most likely have access to college professors' children.

When asked to make recommendations for working with these children as their teacher, the undergraduates were very vague. One group recommended that they both needed more building blocks and things to put together, though no reason for this recommendation was provided. They commented that both needed to work with others. Neither group offered suggestions for how these goals might be accomplished.

In summary, both undergraduate groups characterized Sarah, Danny and their parents in similar ways. Both groups evidenced an attempt to apply course content on child development in their discussion of the tapes, though there was a marked absence of technical vocabulary. Both groups evidenced misapplication or incomplete understanding of some concepts. Both groups went "beyond the information given" to reach erroneous inferences. Both groups had difficulty formulating instructional goals for the children.

The graduate students. All four groups of graduate students used a greater variety of descriptive terms in discussing Danny and Sarah, and all four groups displayed a greater application of technical vocabulary. All four groups noticed Danny's "speech problem." Like the undergraduates, the experienced teachers characterized Danny as an attention seeker, independent, intent, hyper, and aware of the camera. Unlike, the undergraduates, some graduate students noticed his attention to detail while drawing, his holding the pencil properly, his interest in dinosaurs, and his "fantastic imagination." They noticed that Sarah copied Danny -- using the technical terms "imitative behavior" and "role model." They used terms such as "developmental appropriateness" and "cognitive level", and were able to label behaviors in relation to



norms for a particular age. One of the problems of using the word frequency program was that the context is often needed to determine meaning. For example, if the word "control" appears on the list there is no indication as to whether it is used in an ordinary language sense, or as technical vocabulary of teaching (e.g., fine motor control). For this reason, technical vocabulary was analyzed by examining terms in context. The graduates noticed sex stereotyping behavior on the part of parents. Like the undergraduates, they noticed that the parents were giving Sarah attention she didn't seem to want or need.

Graduate students were much more specific about Danny's and Sarah's needs and how they would go about meeting those needs. They discussed encouraging Danny's creativity, directing his energy so he wouldn't turn into a discipline problem, and working on speech and language development. They articulated much more fine tuned observations and recommendations, based on generalizations from their experiences with young children. They commented that Sarah needed opportunities to make her own decisions and choices, and needed some structure to encourage her to verbalize.

They were more likely to express different professional opinions and argue a point. They also expressed broader and more practical concerns, such as concerns for safety when Sarah was running with a lollipop, and concerns for nutrition. When making a generalization, they were more likely to support it with observations. Their inferences were more often "correct", as they drew upon a relatively richer experiential base. They used more technical vocabulary and evidenced more inclusive and more differentiated concepts relating to child development.

Unlike the undergraduates, the graduate students also used the experience as opportunity for self-reflection. For example, one teacher noticed that she had written down more about Danny than Sarah (this was true of all groups -- undergraduate and graduate). "Isn't this so typical in your classes -- the overactive ones get the most attention." Such self-reflective statements were absent in the undergraduates' discussions. This is consistent with Calderhead's comments that "student

teachers often have a high level of 'ego-involvement ...; they are reluctant to be self-critical' (1988, p. 5). He commented that student teachers lack analytical skills, a language for talking about teaching, and a repertoire of alternative approaches.

#### Stimulated Recall: Interactive Thinking of the Undergraduates

The recorded sessions of each of the nine undergraduate students' reflections on their decision-making were transcribed for analysis. For each student, the following information was recorded for each decision-- type of decision, instructional concern, information source, and awareness.

Table 2 presents the number and types of decisions, concerns, information sources, and awareness for each of the nine students. As can be seen, the number of decision points reported ranged from 5 to 41. The median number of decisions was 13 and the mode was 14. (Lessons averaged around 30 minutes). It is interesting to note that all nine students reported more pupil-related decisions than plan-related. For example, one commented, "I decided to stop by him, because he really needs a lot of structure and he is really active and not always with you when you are doing a group lesson. I was trying to figure out how I could provide him with a little more structure. So I decided to go over to him and touch him on the shoulder and point to his paper." This was the student teachers' second, eight week student teaching experience, and in developmental terms they seemed to have moved from survival concerns to being more aware of individual children's needs. This was also reflected in their instructional concerns, where generally, students were more concerned with pupil learning than with pupil behaviors or attitudes.

There were slightly more concerns reported focusing on instructional procedures than for procedures for control. Student teachers reported a moderate concern for both pupil-related and plan-related pacing. For example, one commented, "I knew what time I had left and what I wanted to cover before we went to the planetarium; how much I introduced today and how long I had to go. So I decided to move on to the next topic." In terms of the information sources drawn from,

there was a near equal reliance on verbal and nonverbal observations. Sample comments included, "They were all calling out" and "I noticed he was playing, with his pencil." There was almost no reliance on teacher expectations, recall or hunches. There was almost no explicit articulation of principles of instruction which guided those student teachers' decision-making, though student teachers did frequently articulate alternatives they were considering. A number of student teachers were surprised about the number of decisions they were making. A typical comment was, "I never realized I was making so many decisions, but I guess I do make them, all the time!"

Word frequencies were also calculated for the transcripts of the stimulated recall sessions. Like the discussions of child development, almost no discernible applications of technical vocabulary were observed. Differences were noted in total number of words used, the range of words used, and the number of words used once. These data are included in Table 1. It is interesting to note that the student who reported the largest number of unique words also reported the largest number of decisions. The student reporting the fewest decisions also spoke the fewest words and had the narrowest range of words. Thus it seems that verbal fluency may be a strong factor influencing the number of decisions reported.

#### Practicing Teachers' Perceptions of Student Teachers' Concerns

Transcripts of the nine stimulated recall tapes were read by pairs of practicing teachers towards the end of a three credit hour, graduate course on supervision of student teaching. The following represent the major concerns these 18 teachers observed:

- (1) lack of appropriate alternatives when something goes wrong in a lesson.
- (2) lack of a sense of time. They need to know how to pace lessons and how long certain activities might take.
- (3) lack of foresight about what parts of the lesson might present difficulties for students,
- (4) lack of experience in applying

principles of learning in the classroom.

Teachers commented that they had forgotten about the types of concerns a beginning teacher has. One commented, "A lot of this is things that an older teacher wouldn't think about. They should think about the lesson and nothing else. It's like, if you are a performer, talking into a microphone is second nature. But if it's your first time, there are about thirty things to think about--how far to hold the microphone. . . A lot of it is experience." The practicing teachers suggested that the knowledge the student teachers lacked was a result of their inexperience.

#### Summary

Data from the different methodologies yielded different but complementary pictures of the preservice teachers' knowledge of child development and pedagogy. In summary, the undergraduates' discussion of children revealed attempts to apply course content, however students used "ordinary language" to express concepts rather than applying technical vocabulary to which they were exposed. Undergraduates lacked finely tuned observation skills, and made erroneous inferences. As compared to the experienced teachers, their recommendations were vague and abstract. They did not use the discussion of the video of children as an opportunity to reflect on their own understandings, as the graduate students did.

Though the undergraduates were less observant, analytic, and reflective than the practicing teachers, the stimulated recall sessions did reveal that they had progressed beyond Fuller's (1969) initial stage of survival concerns, towards focusing on pupil learning. They focused more on developing instructional procedures than on issues of classroom management. Though they did not articulate principles of instruction in their stimulated recall interviews and did not apply technical vocabulary, they did select from a repertoire of instructional alternatives. Unlike the discussion of children playing, the stimulated recall sessions did elicit self-reflective statements from the undergraduates. In contrast, the graduates' discussion of the video evoked self-reflective statements.

## Significance

How our students use the knowledge we include in our teacher education program is of central importance in evaluating our programs. What then can we reasonably expect an undergraduate program in teacher education to do? What learnings must depend on more classroom experience? Of the many needs these undergraduates evidenced, which are most important and feasible to address in the limited time we have with our undergraduates? Our assessment has led us to make the following conclusions and program modifications:

(1) Initially, less is best. Our students are exposed to multiple developmental theories and a barrage of technical vocabulary in our current program. Yet they appear to apply little of the language of their profession in discussing children or teaching. We will seek to narrow the range and emphasize application of central concepts via classroom discussions, simulations, and structured reflective journals which integrate theory and practice. Techniques such as concept mapping will be used as a means for students to graphically portray their emerging conceptual frameworks.

(2) We will strive to sharpen the observation and analytic skills of our preservice teachers. We have designed a series of structured classroom observations and interview experiences. Students will collect data, analyze, and interpret information based on key concepts.

(3) Integration of theory and practice will be a goal. Student observation and interview assignments will be tied closely to course content so that students read about and discuss a topic and then observe its application in the classroom.

(4) We will emphasize the importance of reflection on experience and seek to develop learning experiences which maximize reflection. A variety of reflective opportunities will be modeled including structured and unstructured reflective journals, stimulated recall sessions, think-pair-share strategies, peer teaching, small group discussions and clinical supervision.

(5) Communication skills will be developed. Students will be expected to apply effective interpersonal skills in a group project each semester. They will formulate goals in this area and assess their progress. They will learn skills of active listening, sending assertive messages, problem solving, and group process leadership roles. They will be encouraged to apply research on cooperative learning in the classroom.

How will we assess the impact of these program modifications? We will continue to utilize the discussion of a video of children playing, and the stimulated recall methodologies used in this study to develop a comparative data base. Additionally two more types of data are being collected:

(1) Structured reflective journals kept over the year by each preservice teacher and,

(2) Concept maps constructed several times over the course of the year for central processes or topics in the program. Hopefully these additional sources will contribute more fine tuned data on changes in preservice teachers' thinking about children and teaching as they learn to teach.



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Table 1

Word Frequency Scores for the Undergraduate Groups, Graduate Groups, and for the Nine Undergraduate Stimulated-Recall Sessions.

Groups		Total Words	Number of Unique Words	Number of Words Used Once
Undergraduate	1	2,052	553	292
	2	1,876	384	183
Graduate	1	2,689	556	276
	2	495	192	113
	3	1,796	484	264
	4	1,785	446	223
Stimulated Recall Student	1	2,719	505	233
	2	1,534	402	212
	3	1,559	351	169
	4	926	295	169
	5	1,527	374	191
	6	2,581	545	254
	7	637	205	106
	8	474	177	99
	9	1,604	350	160

Table 2

Data Summary of Instructional Concerns of Student Teachers

Categories	Student #	1	2	3	4	5	6	7	8	9
I. Decision Point # Decisions		12	14	16	10	9	41	7	5	19
Pupil Related		5	4	4	5	2	9	4	1	8
Plan Related		1	1	1	1	1	7	1	1	2
Supplementary		3	1	2	3	5	4	2	2	5
Explanation		3	8	9	1	1	21	0	1	4
II. Instructional Concerns										
Pupil Learning		4	2	6	2	2	6	1	0	4
Pupil Attitude		1	1	1	0	1	1	0	0	1
Pupil Behavior		2	4	1	2	1	16	1	1	1
Content-Information		1	1	0	0	0	3	1	0	2
Content-Skills/Processes		0	0	0	0	1	3	0	0	0
Procedure-Instruction		5	3	5	7	3	9	3	2	7
Procedure-Control		4	4	7	2	3	8	1	1	2
Pacing: Pupil-related		0	1	1	0	0	2	1	0	1
Pacing: Plan-related		0	0	2	1	2	1	0	0	4
III. Information Source										
Observation: Verbal		6	4	4	5	1	7	0	0	6
Observation: Nonverbal		1	4	9	4	6	26	7	1	10
Teacher Expectation		0	0	0	0	1	0	0	0	0
Teacher Hunch		0	0	0	0	0	0	0	0	0
Teacher Records/Notes		0	0	0	0	0	0	0	0	0
IV. Awareness										
Principles of Instructions		0	1	1	1	1	0	0	0	0
Teacher Feelings		1	0	0	0	0	0	0	0	2
Alternatives		5	3	4	1	2	1	0	0	3
Teacher Behavior		1	0	0	0	0	0	0	1	3

## Appendix A

### **\*Examples and Definitions of Subcategories in the Coding System**

#### **Decision Points**

Pupil-related: The characteristics or behavior of a pupil, a group of pupils or the class became the basis of the teacher's decision. For Example, "They (pupils) were getting a little more wound up than usual. I was trying to decide how to get them to behave normally. I had to tell them."

Plan-related: When the teacher decides to carry on the lesson as originally planned. For example, "They were not getting the point. But I had to move on in order to cover what I had planned for the period."

Supplementary: When the teacher decides to act in response to unanticipated circumstances; like a sudden idea coming to the teacher, or pupils' reaction to the teachers' planned activity. For example, "They had groaned at the mention of Shakespeare, so I said, 'You don't look happy at that prospect.' I decided to build that word (prospect) in again."

Explanation of events: This is technically not a decision. The teacher simply explains what was happening at that point in the lesson. For example, "I was repeating myself again. That's about it."

#### **Instructional Concerns**

Pupil Learning: The teacher's attention to what the pupils needed to know or should know. For example, "Instead of reading from the book, I wanted them to paraphrase in their own words."

Pupil Attitudes: Teacher attention on the feelings that the pupils might be experiencing. For example, "Why didn't I say 'good answer'? It is something I have noticed. If I recognize the right answer, they get more out of the lesson."

Pupil Behavior: Matters relating to pupils' behavior on discipline or classroom management that engage the teacher's attention. For example, "I was concerned that they were showing off a bit."

Content-Information: This relates to the facts or concepts that the teacher is covering in the lesson. For example, "I wanted to get to the point of church wealth: what form it took and so on."

Content-Skills/Process: The techniques or procedures that are being taught in the lesson and which pupils need to utilize in their work or practice. For example, "I wanted them to refer to their own past experiences."

Procedure- Instruction: The teacher's attention on instructional routines being used in the lesson. For example, "He said it: church support. I repeated it in an easier form to reinforce the point. This would also help the students who couldn't hear the answer."

Procedure- Control: Measures to engage the pupils, keep them on task, or get them involved in the lesson. For example, "I was trying to get the class in control by offering something in return. And it was by trying to get them to realize that I have something that may be helpful in their test tomorrow, and if we did not get through it was their own fault."

Pacing: Pupil- Related: The timing of activities or pacing of content coverage according to pupils' characteristics. For example, "A lot of things were brought up in this class I covered in yesterday's lesson. You have to hit some of the same points to get them home. I get frustrated at having to repeat things yet they need to be helped."

Pacing: Plan- Related: The timing of activities or pacing of content coverage as planned in the lesson notes. For example, "I wanted to get through the class period and hit the most important points. If I had to wait for their answers which were not forthcoming, I would not be able to cover these important points."

\*Adapted from Morine-Dersheimer, et al. (1983).

## Information Source

**Observation-Verbal:** Pupils' verbal behavior as cues to the teacher. For example, "They were getting a little more than usual with such comments like, 'I can't sleep.' and 'Can I go to the bathroom?' Things like that."

**Observation-Nonverbal:** Cues inferred by the teacher from pupils' nonverbal behaviors. For example, "I noticed a lot of blank faces."

**Teacher Expectation:** Pupils' behavior, especially responses, which, because of his/her previous knowledge of the class or some other reason, the teacher expects in the course of the lesson. For example, "I expected them to take five to seven minutes for the first stanza. I was disappointed."

**Teacher hunch:** Refers to the assumptions or guesses that come to the teacher in the course of the lesson and thus prompt him/her to act in some ways. For example, "I thought it was not worth going into because they probably knew what the Catholic church was. I was assuming some type of general knowledge."

**Teacher Recall:** Relates to references made by the teacher, to previous information or events related to the present lesson content, procedure or the pupils. For example, "A lot of the things that were brought up in this lesson I covered in yesterday's class."

**Teacher Records/Notes:** Reference to information the teacher has previously prepared for the lesson. For example, "I looked up my notes to make sure I cover the things I have to cover."

## Awareness

**Principles of Instruction:** General rules that the teacher becomes mindful of and follows during instruction. For example, "One thing I try to stay away from is a negative response. It does not encourage pupil participation."

**Teacher Feelings:** The emotions a teacher experiences at some points in the lesson. For example, "I was repeating myself again. I get frustrated at times having to repeat things."

**Alternatives:** Other techniques or procedures that the teacher becomes aware of which could be used in place of the one actually used in the lesson. For example, "I could have tried to get the answers out of them. But that becomes frustrating to me as it takes more time than necessary."

**Teacher Behavior:** Acts by the teacher, which seem to be more than the ordinary and which (s)he becomes aware of. For example, "I caught myself thinking and asking: 'What am I doing with my hands?' I feel stupid with my hand in my pocket all the time."